REMARKS

Claims 13-15 and 17-23 are pending.

I. The Drawings objections.

"Prior Art" has been indicated in Figure 1 in red ink under separate cover herewith. The amendment of claim 23 obviates the need to show an additional "control unit." Therefore, it is respectfully asserted that the rejections have been addressed.

II. The objections have been respectfully addressed.

Applicants respectfully thank the Examiner for indicating the points at pages 3 – page 4 top in the Office Action which have been addressed herein. No new matter has been added. The amendments herein were made for no more than a "tangential relation" for any equivalents unless explicitly stated that they were not a "tangential relation" reason for amendment or argument.

III. The §112 rejections.

The control unit issue is addressed by specifying "at least one control unit." This an antecedent basis reason for amendment not related to patentability and/or because it was made for no more than a "tangential relation" for any equivalents.

Claim 13 has been amended to use the more preferred language of "without a monitoring for the driving motors." However, the specification does support this language and also the previous language that "no additional monitoring system" (claim 13) is included at page 3, at lines 15-19, i.e., "**controlling** the optical elements **by** electric **direct** drives" **(emphasis added)** and as discussed further below at IV. It is respectfully perfectly reasonable that one skilled in the art would know that direct drive motors without monitors like those claimed would be for example the direct drive motors made by Haydon Switch and Instrument (a copy of the motor's spec sheet is attached hereto). Therefore, there is respectfully no disclosure issue.

IV. The new ground for rejection, i.e., the obviousness rejection of independent claim 13 in view of the Admitted Prior Art (AAA) in combination with Thomas, US 4,161,756.

(Note: Claim 13 has only been amended to overcome the claim objection at page 4, "claim 23 objection" of the Office Action reasons. Therefore, an amendment regarding an objection, is not related to patentabilty *per se*, and is no more than a "tangential relation" for any equivalents.)

Claim 13 claims:

13. (Twice Amended) An arrangement for directly controlling the movement of a zoom system in a stereo microscope, comprising:

direct driving motors for at least one moving lens system wherein the driving motors are controlled by a control unit which reads calculated pre-stored values of reference points from a mathematical controlling curve for directing the movement of the at least one moving lens system by controlling the driving motors in a corresponding manner without necessitating use of mechanical generation of the mathematical controlling curve and without a [an additional] monitoring system for the driving motors.

In contrast, Thomas only teaches a solution with monitoring systems for the motor movement (see position sensor 11, 12 in Fig. 2, digital position sensors 15, 16 in Figure 3 and the description in Col. 3, lines 28 to 44). Therefore, even by combining the AAA with Thomas all of the limitations of claim 13 are not taught or suggested by the cited references as required by MPEP 706.02(j) citing the patent laws.

As was argued previously, the structural difference between claim 13 with direct drive according to claim 13 and references like Thomas and Biber is that the moving lens system in claim 13 is moved using *previously stored values to control the drives.* This means that the mathematically predetermined and calculated lens reference positions, from a mathematical controlling curve, are

read out of storage and adjusted ***without a monitoring system for the driving motors***. The claimed invention accomplishes this by doing away entirely with mechanical generation of the controlling curves of the stereo microscope zoom system, and instead controlling the optical elements by electric direct drives. (see page 3 of the specification).

V. "Omission of an element with retention of the element's function is an indicia of unobviousness" (MPEP 2144.04 II.B.)

Claim 13 explicitly claims:

by controlling the driving motors in a corresponding manner ***without necessitating use of mechanical generation of the mathematical controlling curve and without a monitoring system for the driving motors.*** (***emphasis added***).

MPEP 2144.04 II B citing *In re Edge* makes it clear that applied to the present invention the fact that applicants eliminated the monitoring system but still perform the function of a monitoring system is a strong indicia of unobviousness. This is another reason for allowance of claim 13.

The remaining claims depend from claim 13 and are therefore also allowable.

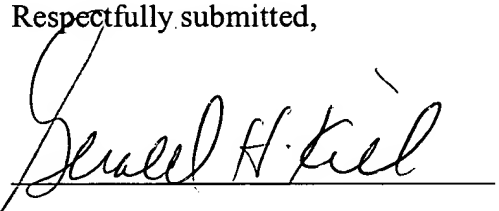
VI. Conclusion.

In light of the *FESTO* case, no claim amendment or argument made herein was related to the statutory requirements of patentability unless expressly stated herein. No claim amendment or argument made was for the purpose of narrowing the scope of any claim unless Applicant has explicitly stated that the argument is "narrowing." Thus, the amendments herein were made for no more than a "tangential relation" for any equivalents unless explicitly stated that they were not "tangential relation" reason for amendment or argument.

Therefore, it is respectfully requested that all of the claims be reconsidered and allowed.

Please call the undersigned for any reason to expedite prosecution of this application.

Respectfully submitted,

By: 

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MARKED-UP CLAIMS

Please amend claims as follows:

13. (Twice Amended) An arrangement for directly controlling the movement of a zoom system in a stereo microscope, comprising:

direct driving motors for at least one moving lens system wherein the driving motors are controlled by a control unit which reads calculated pre-stored values of reference points from a mathematical controlling curve for directing the movement of the at least one moving lens system by controlling the driving motors in a corresponding manner without necessitating use of mechanical generation of the mathematical controlling curve and without a [an additional] monitoring system for the driving motors.

14. (Twice Amended) The arrangement according to claim 13 with two lens members which comprise the at least one moving lens system and are controlled independently from one another.

15. (Once Amended) The arrangement according to claim 13, wherein lens members which comprise the at least one moving lens system and are provided as lens pairs in a Greenough type stereo microscope or telescope type stereo microscope.

19. (Twice Amended) The arrangement according to claim 18, wherein the driving motors are arranged between lens pairs which comprise the at least one moving lens system.

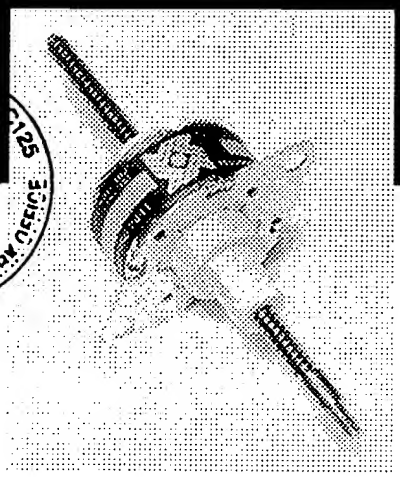
20. (Once Amended) The arrangement according to claim 13, wherein a plurality of moving lens members which comprise the at least one moving lens system and are controlled jointly.

21. (Once Amended) The arrangement according to claim 13, wherein at least two lens members which comprise the at least one moving lens system are driven separately.

22. (Once Amended) The arrangement according to claim 13, wherein a linear magnification that is adjusted is determined and displayed [to the operator] during the controlling of the zoom system.

23. (Once Amended) The arrangement according to claim 13, wherein at least one control unit [control units are] is used for motorized zoom adjustment and for motorized focusing of the microscope.

Linear Actuator Series 26000
Ø 26 mm (1")



Salient Characteristics

Ø 26 mm (1") motor					
Wiring		Bipolar			
Part No.	Captive	2644X-V		2654X-V	
	Non-captive	2634X-V		2684X-V	
Step angle		7.5°		15°	
Travel/Step avail.		.0005"*, .001"		.002", .004"	
Operating voltage		5 VDC	12 VDC	5 VDC	12 VDC
Current/phase		340 mA	140 mA	340 mA	140 mA
Resistance/phase		14.7 Ω	84 Ω	14.7 Ω	84 Ω
Inductance/phase		8.5 mH	55 mH	6.7 mH	44 mH
Power consumption		3.4 W			
Rotor inertia		1.2 gcm²			
Temperature rise		167°F (75°C)			
Weight		1.2 oz (35 g)			
Insulation resistance		20 MΩ			

For production volume orders of 10,000 or more see Series Z26000.

See high resolution section for specialty Series 26000 motors

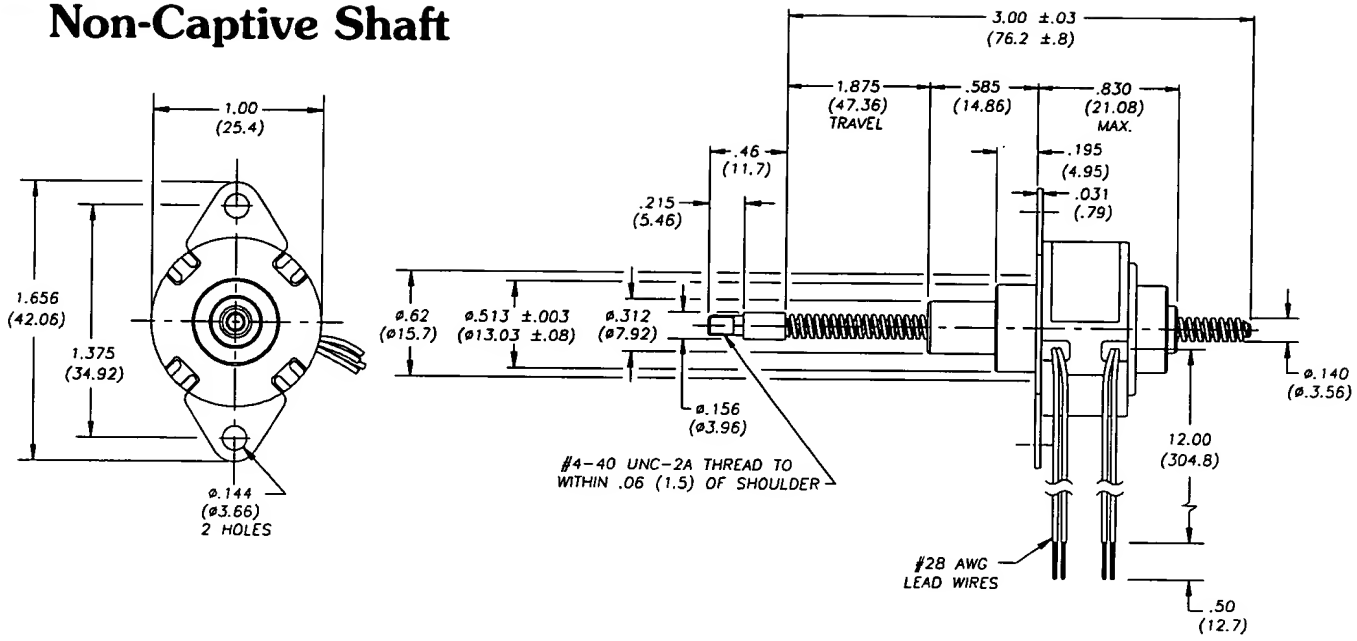
Ø 26 mm (1") motor					
Wiring		Unipolar**			
Part No.	Captive	2646X-V		2656X-V	
	Non-captive	2636X-V		2686X-V	
Step angle		7.5°		15°	
Travel/Step avail.		.0005"*, .001"		.002", .004"	
Operating voltage		5 VDC	12 VDC	5 VDC	12 VDC
Current/phase		340 mA	140 mA	340 mA	140 mA
Resistance/phase		14.7 Ω	84 Ω	14.7 Ω	84 Ω
Inductance/phase		4.3 mH	24 mH	3.4 mH	19 mH
Power consumption		3.4 W			
Rotor inertia		1.2 gcm²			
Temperature rise		167°F (75°C)			
Weight		1.2 oz (35 g)			
Insulation resistance		20 MΩ			

* Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

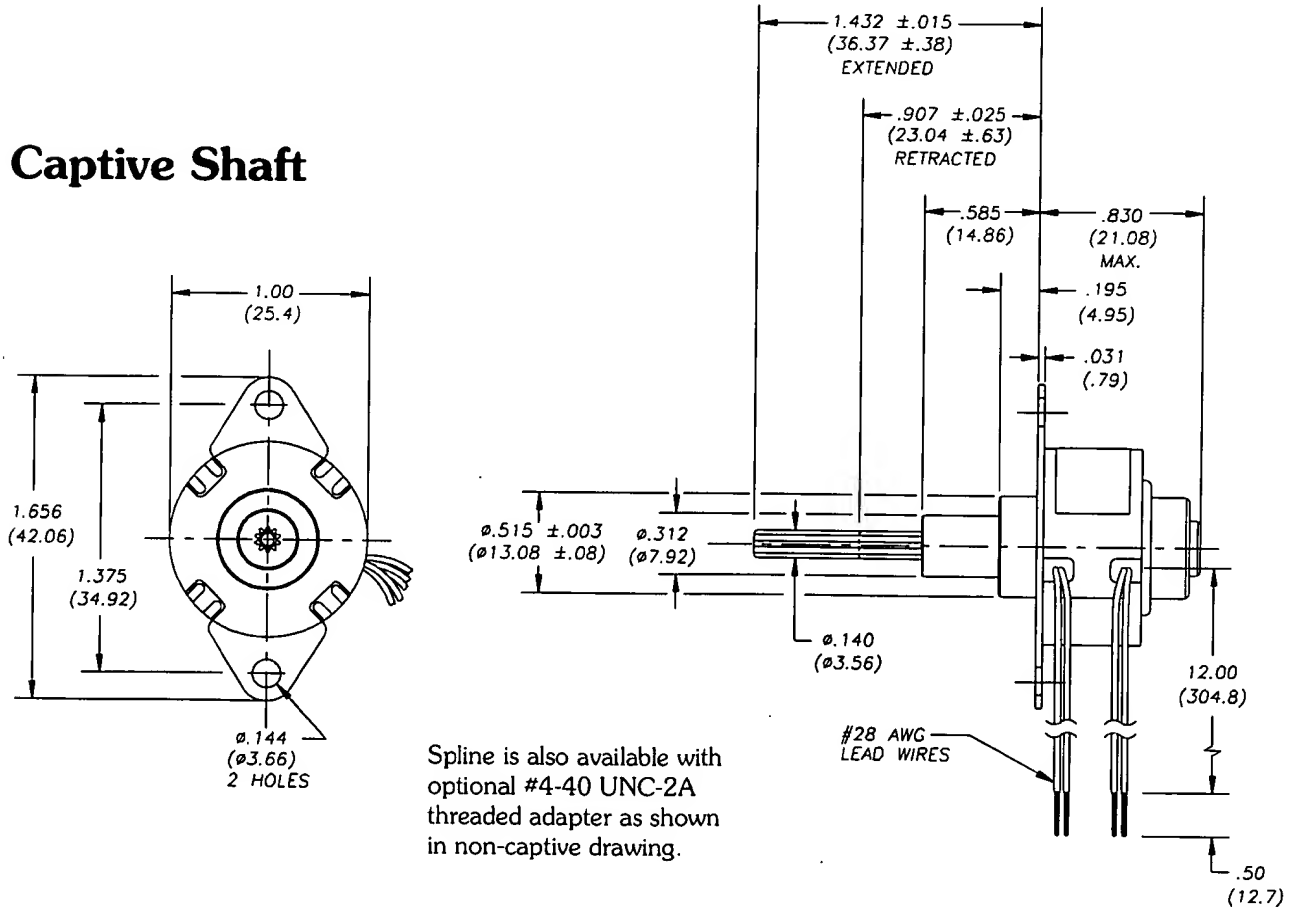
** Unipolar drive gives approximately 30% less thrust than bipolar drive.

Linear Series 26000 Dimensional Drawings

Non-Captive Shaft



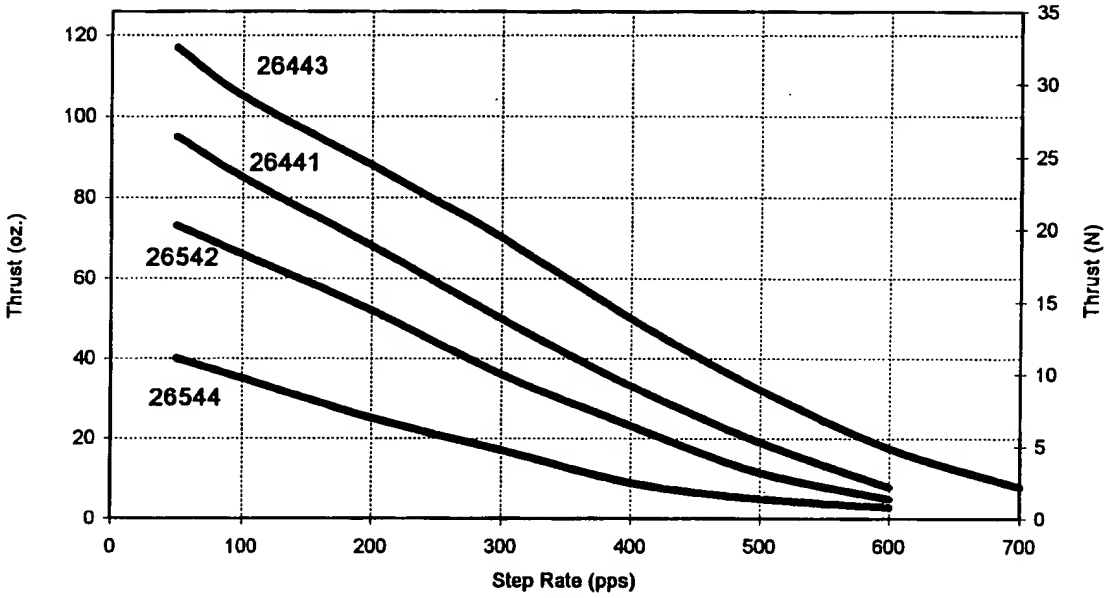
Captive Shaft



Spline is also available with optional #4-40 UNC-2A threaded adapter as shown in non-captive drawing.

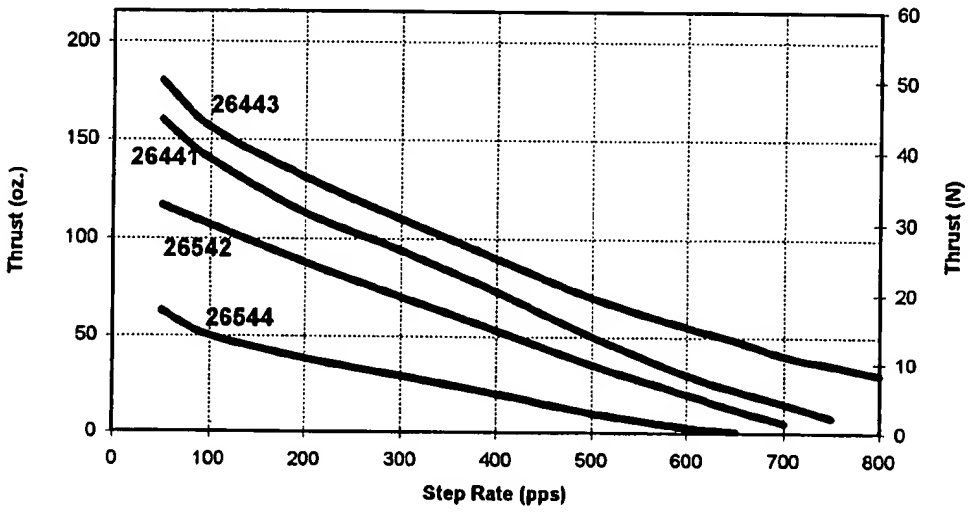
Linear Series 26000 Step Rate vs. Thrust Curves

Bipolar • L/R Drive • 100% Duty Cycle



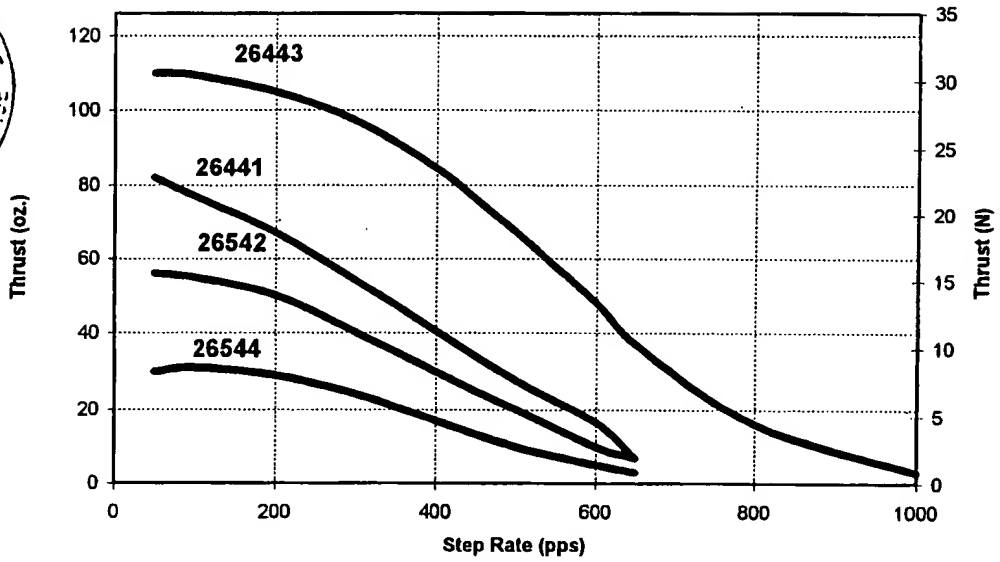
Bipolar • L/R Drive • 25% Duty Cycle

25% duty cycle is obtained by a special winding or by running a standard motor at double the rated voltage.



Linear Series 26000 Step Rate vs. Thrust Curves

Bipolar • Chopper Drive • 100% Duty Cycle



Bipolar • Chopper Drive • 25% Duty Cycle

25% duty cycle is obtained by running a standard motor at double the rated current.